

CLAIMS

1. A collimator comprising:

5 a pair of first plate members having a shielding property against a radiation and movable in a direction parallel to surfaces thereof, the pair of first plate members defining a radiation passing aperture by a spacing between respective opposed end faces;

10 a pair of second plate members having a shielding property against a radiation and parallel to the pair of first plate members and movable in a direction parallel to surfaces thereof, the pair of second plate members having end faces opposed to each other in the shielding property, the pair of second plate members overlapping the pair of first plate
15 members at least partially so as to block any other radiation than the radiation passing through the aperture;

a pair of third plate members having a shielding property against a radiation and parallel to the pair of second plate members, the pair of third plate members having respective
20 end faces opposed to each other with a predetermined spacing, the pair of third plate members overlapping the pair of second plate members at least partially so as to block any other radiation than the radiation passing through the aperture;

25 an adjusting mechanism which adjusts the aperture by moving the pair of first plate members; and

a follow-up mechanism which causes the pair of second plate members to move following the pair of first plate members with movement of the first plate members.

2. A collimator according to claim 1, wherein the
30 adjusting mechanism can move the pair of first plate members

so as to be close to and away from each other.

3. A collimator according to claim 2, wherein the follow-up mechanism comprises:

a rack provided in the first plate member;

5 a gear provided in the second plate member rotatably and engaging with the rack; and

a fixed rack provided in the moving direction of the second plate member and engaging with the gear.

10 4. A collimator according to claim 1, wherein the follow-up mechanism comprises:

an arm member mounted at an intermediate portion thereof to the second plate member and rotatable about the mounting portion in a plane parallel to the plate surface;

15 a groove formed in the first plate member and with which one end of the arm member is engaged, the groove permitting movement of the one end of the arm member in a direction perpendicular to the moving direction of the first plate member; and

20 a groove formed in the third plate member and with which an opposite end of the arm member is engaged, the groove permitting movement of the opposite end of the arm member in a direction perpendicular to the moving direction of the second plate member.

25 5. A collimator according to claim 1, wherein the radiation is X-ray.

6. A radiation irradiator having a radiation source and a collimator for applying a radiation from the radiation source to an object through an aperture, the collimator comprising:

30 a pair of first plate members having a shielding property

against a radiation and movable in a direction parallel to surfaces thereof, the pair of first plate members defining a radiation passing aperture by a spacing between respective opposed end faces;

5 a pair of second plate members having a shielding property against a radiation, parallel to the pair of first plate members, and movable in a direction parallel to surfaces thereof, the pair of second plate members having end faces opposed to each other, the pair of second plate members
10 overlapping the pair of first plate members at least partially so as to block any other radiation than the radiation passing through the aperture;

a pair of third plate members having a shielding property against a radiation and parallel to the pair of second plate
15 members, the pair of third plate members having respective end faces opposed to each other with a predetermined spacing, the pair of third plate members overlapping the pair of second plate members at least partially so as to block any other radiation than the radiation passing through the aperture;

20 an adjusting mechanism which adjusts the aperture by moving the pair of first plate members; and

a follow-up mechanism which causes the pair of second plate members to move following the pair of first plate members with movement of the first plate members.

25 7. A radiation irradiator according to claim 6, wherein the adjusting mechanism can move the pair of first plate members so as to be close to and away from each other.

8. A radiation irradiator according to claim 6, wherein the follow-up mechanism comprises:

30 a rack provided in the first plate member;

a gear provided in the second plate member rotatably and engaging with the rack; and

a fixed rack provided in the moving direction of the second plate member and engaging with the gear.

5 9. A radiation irradiator according to claim 6, wherein the follow-up mechanism comprises:

an arm member mounted at an intermediate portion thereof to the second plate member and rotatable about the mounting portion in a plane parallel to the plate surface;

10 a groove formed in the first plate member and with which one end of the arm member is engaged, the groove permitting movement of the one end of the arm member in a direction perpendicular to the moving direction of the first plate member; and

15 a groove formed in the third plate member and with which an opposite end of the arm member is engaged, the groove permitting movement of the opposite end of the arm member in a direction perpendicular to the moving direction of the second plate member.

20 10. A radiation irradiator according to claim 6, wherein the radiation is X-ray.